

# **EXHIBIT 16**

## **PUBLIC REDACTED VERSION**

ATTORNEYS' EYES ONLY

Page 1

1 UNITED STATES DISTRICT COURT  
2 NORTHERN DISTRICT OF CALIFORNIA  
3 SAN FRANCISCO DIVISION

4 IN RE GOOGLE PLAY STORE : Case No.  
5 ANTITRUST LITIGATION : 3:21-md-02981-JD

6 This Document Relates To:

7 State of Utah et al. v.

8 Google LLC et al.

9 Case No. 3:21-cv-05227-JD

10 Match Group, LLC et al. v.

11 Google LLC et al.

12 Case No. 3:22-cv-02746-JD

13 Epic Games Inc. v. Google

14 LLC et al.

15 Case No. 3:20-cv-05671-JD

16 In Re Google Play

17 Consumer Antitrust

18 Litigation

19 Case No. 3:20-cv-05761-JD

20 \*\* ATTORNEYS' EYES ONLY \*\*

21 TUESDAY, APRIL 4, 2023

22 Video Recorded and Remote Zoom

23 Deposition of HAL J. SINGER, Ph.D., taken  
24 pursuant to Notice, at the law offices of  
25 Munger, Tolles & Olson LLP, 601 Massachusetts  
Avenue NW, Washington, DC, commencing at  
approximately 9:11 a.m., on the above date,  
before Rose A. Tamburri, RPR, CM, CCR, CRR,  
USCRA Speed and Accuracy Champion and Notary  
Public.

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Class in In re Google Play Consumer

12 Antitrust Litigation

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8 Google LLC et al.

9 ALSO PRESENT:

10 BRYAN BLOOM, ESQUIRE  
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13 GLEN FORTNER, Videographer

(Via Remote Zoom)

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15 BRANDON KRESSIN, ESQUIRE  
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17 ADAM HOEFELICH, ESQUIRE  
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23  
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25

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## I N D E X

## TESTIMONY OF: HAL J. SINGER, Ph.D.

By Mr. Raphael.....7, 423

By Ms. Giulianelli.....423

## E X H I B I T S

EXHIBIT NO.	DESCRIPTION	PAGE NO.
DX-1112	Merits Reply Report of Hal J. Singer, Ph.D.	6
DX-1113	University of Utah Campus Directory	20
DX-1114	Logit Chapter from Kenneth Train Textbook	92
DX-1115	Apple Slide Deck - Bates Nos. DX-4526.001 - 138	253
DX-1116	Daniel L. McFadden Nobel Prize Lecture, December 8, 2000	410

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1

## 2 DEPOSITION SUPPORT INDEX

3

## 4 DIRECTION TO WITNESS NOT TO ANSWER

5 Page Line

6 None

7

## 8 REQUEST FOR PRODUCTION OF DOCUMENTS

9 Page Line Description

10 None

11

12

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14

## 15 STIPULATIONS

16 Page Line

17 None

18

## PREVIOUSLY MARKED EXHIBITS REFERRED TO

19

EXHIBIT NUMBER

PAGE REFERENCED

20

DX-1059

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1 (Whereupon, a document was marked,  
2 for identification purposes, as Exhibit  
3 DX-1112.)

4 THE VIDEOGRAPHER: Good morning.

5 We are going on the record at 9:11  
6 on March 4th, 2023. {Sic}

7 Please note that the microphones  
8 are sensitive and may pick up whispering and  
9 private conversations. Please mute your  
10 phones at this time.

11 Audio and video recording will  
12 continue to take place unless all parties  
13 agree to go off the record.

14 This is Media Unit 1 of the video  
15 recorded deposition of Hal Singer, in the  
16 matter of In Re: Google Play Store Antitrust  
17 Litigation, filed in the United States  
18 District Court, Northern District of  
19 California.

20 The location of the deposition is  
21 Munger Tolles.

22 My name is Glen Fortner  
23 representing Veritext and I'm the  
24 videographer. The court reporter is Rose  
25 Tamburri from the firm Veritext.

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1 I'm not related to any party in  
2 this action, nor am I financially interested  
3 in the outcome.

4 Counsel will be noted on the  
5 stenographic record.

6 Will the court reporter please  
7 swear in the witness and then counsel may  
8 proceed.

9 - - -

10 ...HAL J. SINGER, Ph.D., after  
11 having been duly sworn and/or affirmed, was  
12 examined and testified as follows...

13 - - -

14 EXAMINATION

15 - - -

16 BY MR. RAPHAEL:

17 Q. Good morning.

18 A. Good morning.

19 Q. Can you state your name for the  
20 record.

21 A. Sure. Hal Jason Singer.

22 Q. And, Dr. Singer, you've been deposed  
23 a number of times; is that right?

24 A. Yes.

25 Q. How many, would you estimate?



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1 and the resulting effect on damages was even  
2 smaller.

3 Q. And you don't recall why you made  
4 those changes?

5 A. I have a -- I have a hazy  
6 recollection that it had something to do with  
7 new and better data than what we had used at  
8 the class certification stage.

9 Q. Okay.

10 Now, one of your damage models  
11 that measures overcharges assumes that there  
12 are separate app distribution and in-app  
13 after-markets; is that right?

14 A. Did you say one? I'm sorry.

15 Q. Yeah, one of your damage models, or  
16 maybe some of -- let me ask a better question.

17 Some of your damage models assume  
18 that there are separate app distribution and  
19 in-app after-markets?

20 A. Yeah. I would say, just to be clear,  
21 almost all, right, so you gotta flip it around  
22 and say almost all.

23 There -- there are a few --  
24 there's maybe one or two that I offer in the  
25 alternative, if the fact-finder determines

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1 that it's --it's one market that I could  
2 offer -- I could at least speak to damages in  
3 that scenario.

4 But the -- but the base case, the  
5 baseline for almost all the models is two  
6 separate markets.

7 Q. But you do have one iteration of your  
8 damages model in which you have assumed that  
9 there is one market for both app downloads, as  
10 well as transactions after the app download;  
11 right?

12 A. I mean, if I could just put it in my  
13 favorite term --

14 Q. Sure.

15 A. -- in-app distribution and in-app --  
16 in-app services, yes.

17 Q. Okay. And in the -- let me start  
18 again.

19 In the damage model that assumes  
20 that there's one market for app distribution  
21 and in-app services, does that assume that  
22 there's no unlawful tying?

23 A. Well, for one case, I -- the way that  
24 I motivate it is I say assuming the  
25 fact-finder concludes there is one market. So

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1 I think that if there is one market, you can't  
2 have tying.

3 But in another case where I'm  
4 solving for the -- the subsidy, I say that  
5 that one would be consistent with two markets.  
6 The only reason why I say for one subsidy is  
7 the idea that it would be strange for Google,  
8 or whoever is -- yeah, Google to restrict the  
9 subsidy to only, say, work for initial  
10 downloads and not allow them to use it for  
11 subsequent ancillary purchases.

12 Q. Right.

13 But on the -- on the damages model  
14 that estimates overcharges in a world where  
15 there is one market for app distribution and  
16 in-app services, in that scenario, you're  
17 assuming that there's no unlawful tying?

18 A. I think that's fair, that in the --  
19 or I think I call it the single take rate  
20 model.

21 Q. Right.

22 A. But I think that in that -- in that  
23 model, I tell the reader that this is done in  
24 the contingency that the fact-finder  
25 determines there is a single market. And so

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1 in that case, you couldn't have a tie if  
2 there's a single market.

3 Q. Understood.

4 With respect to these overcharge  
5 models we've been discussing, you're trying to  
6 measure whether consumers paid more for app  
7 subscriptions or in-app purchases as a result  
8 of Google's anti-competitive conduct?

9 A. Let me -- let me just hear it back; I  
10 might be getting -- I might be getting tired.  
11 But let me just hear it back. I'm sorry.

12 Q. Sure.

13 With respect to overcharges, what  
14 you're trying to measure is whether consumers  
15 paid more for app subscriptions or in-app  
16 purchases as a result of Google's challenged  
17 conduct?

18 A. I think ultimately, we are trying to  
19 get overcharges from the consumers'  
20 perspective, but I just want to make sure that  
21 your -- your question allowed for the  
22 possibility that the overcharge can -- can  
23 work through two separate mechanisms; one is  
24 through an inflated take rate that gets baked  
25 into the inflated app prices. But -- but

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1 Q. That's what I wanted to ask you.

2 You don't have to do a formal  
3 SSNIP test to correctly define a relevant  
4 market?

5 A. Correct. In many cases, you can  
6 apply what are called the Brown Shoe factors  
7 which -- which could get a Court to -- to  
8 agree to the existence of a market without any  
9 recourse to the HMT. You probably enjoy me  
10 saying that better than Hypothetical  
11 Monopolist Test, but that's the last time,  
12 HMT.

13 Q. Can you explain to the jury what the  
14 Android App distribution market is?

15 A. Sure. It is a market in which a  
16 platform brings together app developers and  
17 users so that they can discover types of apps  
18 that they enjoy using and can engage in an  
19 exchange of trade to where they're both better  
20 off.

21 Q. Who are the buyers and who are the  
22 sellers in the Android App distribution  
23 market?

24 A. Well, that's a bit of a -- oh, yes,  
25 who are the buyers and the sellers. It's a

1 bit of a trick question or tricky question  
2 because it's a two-sided market. So you could  
3 think about both developers and users as being  
4 the consumers on each side of the platform.

5 But if you're asking who the  
6 supplier is in that market, I mean, Google  
7 Play Store is the obvious one, right, but it  
8 could be any Android App distribution  
9 provider, as I've defined that market.

10 Q. Are in-app purchases or subscriptions  
11 part of the Android App distribution market?

12 A. No.

13 Q. What price do consumers pay in the  
14 Android App distribution market?

15 A. The price for access is effectively  
16 free of charge if you ignore that very  
17 minuscule subsidy that Google is offering.  
18 But if you take the subsidy into  
19 consideration, you can think of that as a  
20 negative price of accessing the platform.

21 Q. And that's the price for the user  
22 side; right?

23 A. Correct.

24 Q. And the price on the developer side  
25 for the app distribution market are the

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1 first day of the Android market. It's  
2 conceivable that Android market predates the  
3 MADA, but -- but -- but I think that it --  
4 this was all happening around the same time.

5 Q. Do you know whether Google was  
6 offering carriers [REDACTED] [REDACTED] [REDACTED]  
7 [REDACTED] [REDACTED] [REDACTED] at any  
8 time after it launched the MADAs?

9 A. Oh, yes, they did that for several  
10 years. I think that they didn't take the rev  
11 share with carriers down to -- to zero until  
12 about 2012. And what happened then is that  
13 Google determined that the carriers no longer  
14 represented a threat to Google at that point.

15 Q. Right.

16 So that --

17 A. But -- but that is consistent with  
18 them also having market power and choose --  
19 and -- and imposing a super competitive take  
20 rate on developers, right?

21 Q. In paragraph 26 here, though, you  
22 said, "In earlier years, before Google  
23 acquired monopoly power, they retained, at  
24 most, [REDACTED] [REDACTED] [REDACTED] [REDACTED] ."

25 So in the paragraph 26 here,

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1 change in your hypothetical, was whether  
2 Google would withdraw access to the APIs if  
3 the OEM refused to take the bundle of GMS,  
4 including Play.

5 Q. Are you aware of any promise by  
6 Google that it would always make all -- all of  
7 its public APIs available publicly?

8 A. I'm not aware of such a promise.

9 Q. Are you aware of any promise that  
10 Google made that it would never profit from  
11 the Google Play Store?

12 A. I -- I'm not aware of a promise. I'm  
13 aware of record evidence that suggests that it  
14 wasn't Google's original intention to make  
15 money on the Play Store, but I don't know if  
16 that was broadcast to -- to developers that  
17 way as a promise.

18 Q. And are you aware of any promise that  
19 Google made to the cellular carriers that it  
20 would always offer them [REDACTED] of its  
21 revenue from the Play Store?

22 A. No. I actually think that that --  
23 that my reading of the record evidence, that  
24 came as a surprise to the carriers.

25 Q. Are you offering the opinion that